Space Weather Forecast

Issued on Thursday, 19 May 2022 at 01:06 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor to Moderate Radio Blackouts likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the past 24 hours with frequent Common-class flares, and a recent low level Moderate flare from the large, magnetically complex spot group in the northeast quadrant.

There are currently seven numbered sunspot regions on the visible disc. The main spot group lies in the northeast quadrant and is a large, magnetically complex sunspot, still showing some growth and magnetic development. Other spot regions are much smaller and less magnetically complex, and generally either stable or showing decay.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind declined from elevated to slightly elevated levels as the influence of the fast wind from a coronal hole eased. The Interplanetary Magnetic Field was mainly weak, with no noteworthy north-south component. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to continue mostly Low, but with further Moderate-class flares likely, and a slight chance of an isolated Strong-class flare (R3 Radio Blackout).

Solar Wind / Geomagnetic Activity: A weak CME was observed during 17 May. This has been assessed as most likely passing behind Earth's orbit on 20 May, but may give a glancing blow. Confidence is very low, however. A further fast wind arrival is expected on day 1 (19th) from another coronal hole. Solar winds are likely to become elevated again, only gradually easing later day 3 or day 4 (21st or 22nd).

Geomagnetic activity is forecast to increase to Unsettled to Active with a slight chance of a G1/Minor Storm interval, due to the fast wind arrival of CH82, most likely on day 1 (19th). Thereafter, largely Quiet to Unsettled conditions, with a slight chance of Active intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring. There is a chance of this count rate increasing due to any notable flares, most likely from the large and developing sunspot near the north centre disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	15	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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